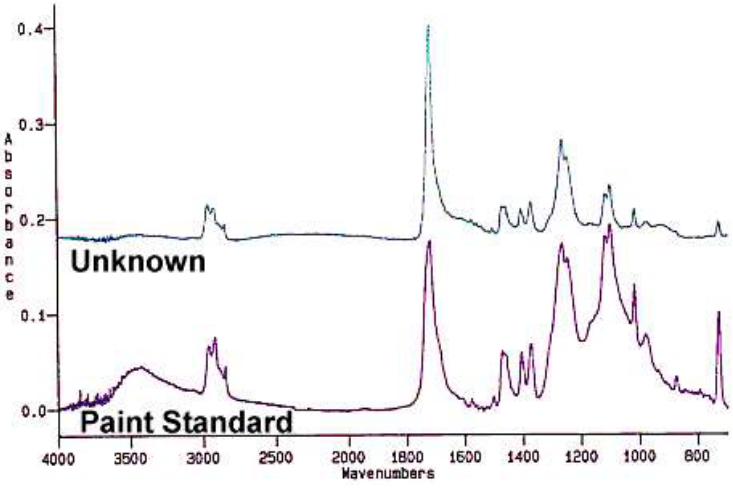
New Investigative Tool Answers Question: 'What is it?'

It's a scene right out of *CSI:Miami,* a mysterious white powder is swabbed off a desk by a gloved technician and rushed back to the lab for analysis. The clock is ticking down as the fate of mankind awaits the final results from the lab.

Laboratories routinely test for the presence of target substances. Standardized and validated test methods are used to detect the presence of suspected biological organism or chemical. The "white powder" incidents have provided a new challenge for the KDHE laboratories. When a negative test result was reported for anthrax the frequently asked question was "if it isn't anthrax, what is it?" Until recently there was not a simple, rapid way to provide an answer to this question.

The Division of Health and Environmental Laboratories (DHEL) recently acquired an instrument capable of identifying unknown powders rapidly with high reliability. The device is a Fourier Transform Infrared Spectrophotometer (FT/IR) mounted on a microscope.

A few particles of a suspect powder are placed on a slide and examined visually. The analyst can select an individual particle and obtain an Infrared (IR) spectrogram. The spectral data obtained is matched against a computerized spectral database. The identities of the compounds with the best fit are displayed in order of highest probability.



An IR analysis of a paint sample displays its chemical "fingerprint" against a known sample from the computer database.

Several DHEL analysts recently participated in an IR spectra interpretation training presentation to assist in validation of the computer identification of the sample. The addition of this analytical technique provides another valuable tool for identification of substances that may be used in a terrorist event or a hoax.